THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE

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Approach

Decompression SICKNESS

What are your chances of getting it?

The Navy & Marine Corps Aviation Safety Magazine

May-June 2013 Volume 58, No. 3

Mishaps cost time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness. This magazine's goal is to help make sure that personnel can devote their time and energy to the mission. We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is hazardous; the time to learn to do a job right is before combat starts.

Approach (ISSN 1094-0405) is published bimonthly by Commander, Naval Safety Center, 375 A Street Norfolk, VA 23511-4399, and is an authorized publication for members of the Department of Defense. Contents are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense, or the U.S. Navy. Photos and artwork are representative and do not necessarily show the people or equipment discussed. We reserve the right to edit all manuscripts. Reference to commercial products does not imply Navy endorsement. Unless otherwise stated, material in this magazine may be reprinted without permission; please credit the magazine and author. *Approach* is available for sale by the Superintendent of Documents, P.O. Box 979050, St Louis, MO 63197-9000, or online at: bookstore.gpo.gov. Telephone credit card orders can be made 8 a.m. to 4 p.m. Eastern time at (866) 512-1800.Periodicals postage paid at Norfolk, Va., and additional mailing offices.

Postmaster: Send address changes to *Approach*, Code 71B,
Naval Safety Center, 375 A Street
Norfolk, VA 23511-4399
Send articles and letters to the address above, or via e-mail to the editor, jack.stewart@navy.mil.

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May-June Thanks

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Departments

Front cover: ABH3 Eric Augustine directs an EA-6B Prowler from VAQ-133 on the flight deck of USS *John C. Stennis* (CVN 74). Photo by MC2 Kenneth Abbate.

Back cover: Photo by Allan Amen.

Command Excellence Through Safety

The Chief of Naval Operations and the Commander Naval Safety Center are proud to announce the winners of the CNO Aviation-Related Safety Awards for CY 2012.

CNO Aviation Safety Award

These award winners are recognized for their professionalism, commitment to excellence, solid leadership and competent risk management which resulted in safe and effective operations.

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COMNAVAIRPAC
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MARINE CORPS INSTALLATIONS PACIFIC
MCAS KANEOHE BAY

Naval Aviation Readiness Through Safety Award and the Adm. James S. Russell Naval Aviation Flight Safety Award

Presented annually to the controlling custodian that has contributed the most toward readiness and economy of operations through safety. The command selected must have an outstanding safety record, an aggressive safety program, and an improving three-year safety trend.

Winner: FOURTH MAW

Admiral Flatley Memorial Award

To recognize the CV/CVN and LHA/LHD ships with embarked CVW or MAGTF, which surpass all competitors in overall contributions to safety. These teams are selected based on operational readiness and excellence, and an exceptional safety program and record.

Winners: USS *Enterprise* and CVW-1
USS *Makin Island* and 11TH MEU

Runners-up: USS *John C. Stennis* and CVW-9
USS *Peleliu* and 15TH MEU

Grampaw Pettibone Award

Presented annually to individuals and units that contributes the most toward aviation safety awareness through publications and media resources.

Unit award: Winner: VAW-125
Individual award: Winner: Capt. Heath Ruppert, USMC, The Basic School
Media award: Winner: HT-18

Decompression sickness (DCS; also known as divers' disease, the bends or caisson disease) describes a condition arising from dissolved gases coming out of solution into bubbles inside the body on depressurization.

Focus on Decompression Sickness

BY LCDR. LISA FINLAYSON, MSC

THE EXPOSURE TO ALTITUDE can lead to DCS. It can be undetectable, mild or life threatening, depending on the severity of exposure. Generally, DCS cases occur due to cabin altitude exposure above 18,000 feet. The higher the altitude, the longer at altitude, and flying within 24 hours after diving all increase the chance of DCS.

Data show that as delays to treatment increase, the frequency of irreversible neurologic damage rapidly increases. Aircrew should review OPNAVINST 3710.7U, 8.2.4.6, and their individual NATOPS for emergency procedures. Aircrew should also see the flight doc upon landing and discuss their flight profile and symptoms. The flight doc should then consult with a dive doc to determine if hyperbaric treatment or other follow-up is required.

Recently, an FA-18A pilot got a Type II DCS hit shortly after deploying OCONUS. The squadron had a plan in place for such a situation. With quick recognition and a complete team effort within the squadron, this pilot was inside the chamber within two hours of landing. The Naval Safety Center (NSC) recommends that all squadrons develop a DCS plan, place it in their duty binders, and consider using it as a quarterly premishap drill with local medical facilities. The plan should include, at a minimum, the location of the two closest hyperbaric chambers staffed and capable to treat DCS, POC information for 24/7 assistance, and also a site-specific transportation plan for aircrew (on or off base) to get to the chamber.

Military operational planners can use the Divers Alert Network (DAN) to identify chambers available worldwide for home base, deployments and cross-countries by emailing medic@dan.org. Additional resources include local aeromedical safety officers (AMSOs), Aviation Survival Training Centers (ASTCs), and the DCS Resource Packet on the NSC aeromedical webpage at http://www.public.navy.mil/navsafecen/Pages/aviation/aeromedical/Aeromedical.aspx

The following two articles are separate accounts of a single EA-6B flight with a crew of four over Afghanistan. While preparing to tank, the pilot started to show signs of DCS. The first account is by the pilot, and the second is by his crew.

LCDR. FINLAYSON IS THE AVIATION PHYSIOLOGIST WITH THE NAVAL SAFETY CENTER.

DCS Over Afghanistan

BY LT. JOSH LANG

We had completed five months of cruise on USS *Abraham Lincoln* (CVN-72), and the day started as every other day of Operation Enduring Freedom (OEF). A standard overall brief in the carrier intelligence center (CVIC) was followed by an individual crew brief in the ready room. The weather was supposed to be a factor, so we went over weather contingencies and divert options. We specifically discussed approaches into Bastion and Kandahar airfields, along with ship-to-shore descent and landing checklists.

After swapping into the spare Prowler, we made a Case I launch. We transited up the Boulevard; the mission went as briefed.

While getting ready to rendezvous with our last tanker, I had adjusted my oxygen mask and lowered my seat. I advanced the throttles to exit our jamming orbit and headed to the tanker track.

ECMO-1 first noticed the acrid and pungent smell in the forward cockpit, which was immediately confirmed by ECMO-2 and 3. I smelled it after momentarily removing my mask. ECMO-1 briefly held the air conditioning switch to "Full Cold" and the smell quickly dissipated. We immediately discussed performing the boldface procedures for A/C FULL HOT/SMOKE/FUMES IN COCKPIT, but opted not to because holding the air conditioning switch momentarily to "Full Cold" rapidly eliminated the smell. However, we agreed that should the smell return, the boldface steps would be completed without delay.

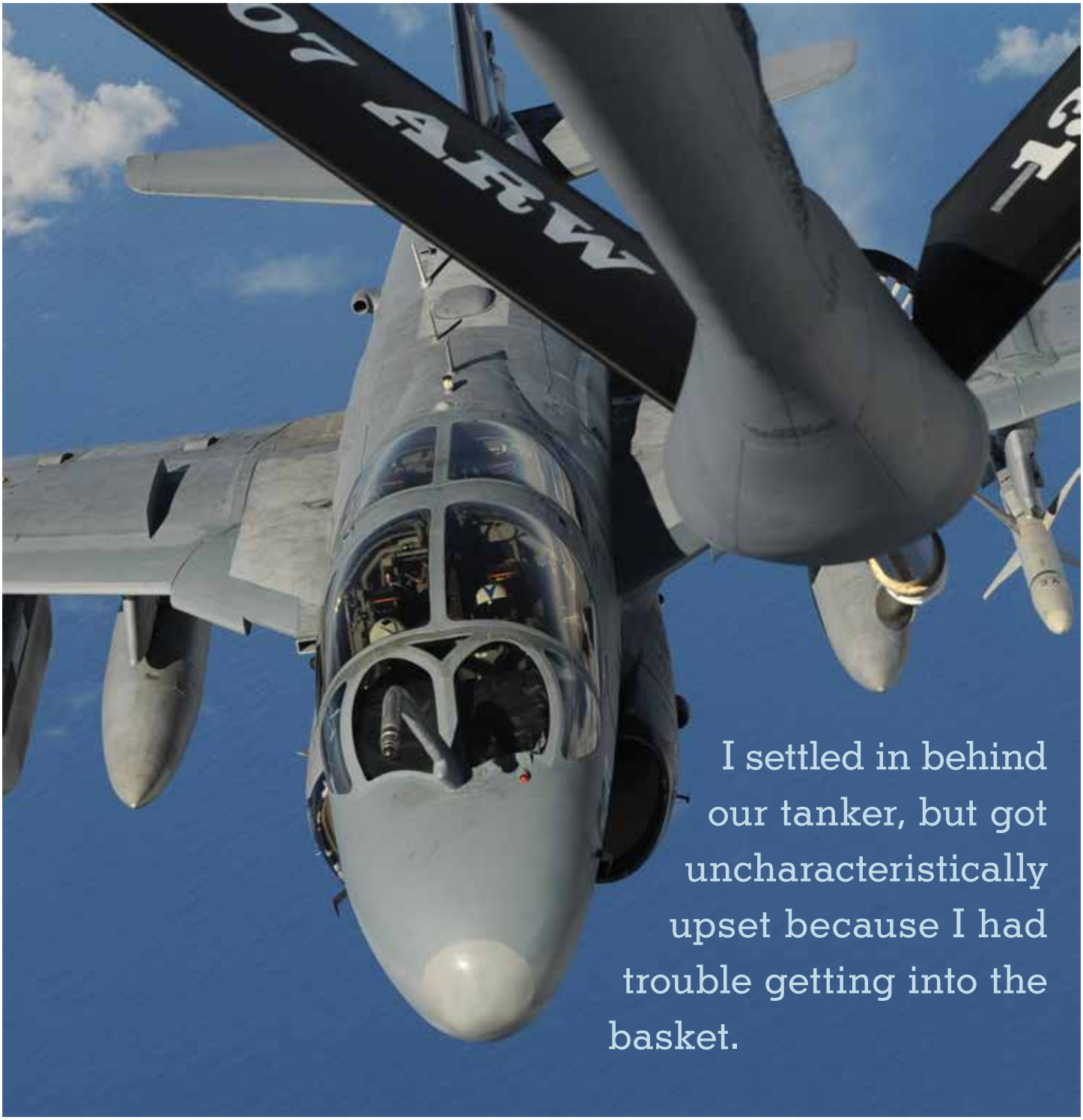
We continued the transit to the tanker track at 27,000 feet. Our controlling agency had us descend to 24,500 feet for traffic deconfliction from a section of Hornets en route to the same tanker. Established in the tanker track and with our tanker in sight, I moved the throttles to military rated thrust (MRT) to expedite the joinup. The same smell instantly returned, but it was much stronger than the first time. ECMO-1 immediately noticed the smell, told the crew, and both ECMO-2 and 3 confirmed it. ECMO-1 and I executed the boldface procedures while maintaining a safe standoff range from the tanker. The scent quickly dissipated as the cabin pressure was dumped per the procedures.

We agreed to continue to the tanker, take on a full load of fuel and determine the next course of action. ECMO-1 requested the tanker descend to a lower altitude because the procedure called for flying no higher than 25,000 feet without cabin pressurization. The tanker descended to 24,000 feet, and we resumed the joinup at 23,500 feet. After completing the rendezvous, I noticed the back of my legs and the top of my arms started to tingle. I told the crew that I "didn't feel right." I also mentioned the tingling sensations, but still felt comfortable taking gas and that I wished to continue.

I settled in behind our tanker, but got uncharacteristically upset because I had trouble getting into the basket. After three tries, we eventually got good contact. We took 5,000 pounds of fuel before the tingling became too uncomfortable.

I told my crew that "I can't do this."

I backed out of the basket and repositioned to starboard observation. At that point, I told the crew that once we were clear of our tanker we were heading to Kandahar. I started a descending turn to place the airfield on our nose as ECMO-1 selected EMERGENCY on our IFF. He told our controlling agency that we were declaring an emergency. ECMO-2 contacted Kandahar approach and said we would require Navy maintenance, and that we would be landing in a few minutes. On our way to the airfield we briefed for the HI-ILS RWY 23



I settled in behind our tanker, but got uncharacteristically upset because I had trouble getting into the basket.

(previously briefed on the boat), the SHIP-TO-SHORE checklist, as well as ashore particulars regarding carrier pressurized tires and aerobraking.

We were hooked in front of traffic for priority sequencing. We flew the HI-ILS, made our gear call at three miles, touched down on the piano keys, and began to aerobrake with good flaperon popups. With higher than anticipated line speeds, I dropped the nose and got on the brakes. With standing water on the runway, we hydroplaned with nearly 3,000 feet of runway remaining. ECMO-1 called for the hook, and I dropped it 500 feet prior to the long field arresting gear.

The hook skipped the wire, but we stopped on the runway and taxied off for a hot-brake check. A night-time postflight after a quick taxi to the ramp revealed only a scraped tailhook. However, a morning postflight

by maintenance revealed a bull's-eyed starboard main tire. The next three days were spent as guests of the resident Marine Harrier squadron (great guys), and were littered with visits to the base hospital for medical evaluations.

MRIs and X-Rays revealed slight barotrauma (most likely from the rapid cabin decompression during the cabin dump) to my sinuses and a little fluid buildup on my eardrum.

The most disconcerting aspect of the entire flight was the decompression-sickness (DCS) symptoms. Our Prowler boldface calls for a land ASAP with symptoms of DCS, and for good reason. Even having gone through reduced oxygen breathing device (ROBD) training during flight school in Meridian, I would never have thought that my emotional response would be what tipped me and my crew off that I was in bad shape. While ROBD training is intended to subject the trainee to hypoxic conditions, the symptoms of hypoxia and DCS can be extremely similar. The only similar symptom between my training and what actually happened was the tingling sensation. I had no loss of vision, no fuzzy tongue, and my fingertips didn't turn blue. Believe me, I checked, and I'm sure that will haunt ECMO-1 for the rest of his life.

Fortunately, we flew with a set crew during OEF. That familiarity is what can tip off a crewmember to someone struggling. I had flown nearly 20 flights with my ECMO-1, and we were in sync. He noticed me struggling to tank, and my uncharacteristic response. He could tell that I was not myself. Once I told the crew, "I can't do this," he knew there was a problem and reacted.

I feel this event highlights several positive key aspects of naval aviation. First, we conducted a thorough brief, to include all aspects of diverting: weather, tanker emergencies, instrument approaches, SHIP-TO-SHORE checklists, communications and crew resource management.

THE BENEFITS OF GOOD CRM cannot be overstated. Briefing crew responsibilities and duties is important, but so is communicating what is happening in the cockpit. With four crewmembers, there is plenty of individuality in the jet. Each person must speak up and talk about limiting factors, and the crew must perform to help the lowest comfort level. In this instance it was me, the pilot, who was experiencing symptoms of DCS and no one else. Our squadron culture is to adhere to the lowest comfort level and take appropriate action. Landing ASAP was our bold-face action, and we followed through with it instead of trying to push it back to the boat. There was no need and no pressure to be the hero.

I hope this event gives each aviator some food for thought regarding how they view our training. Take what is taught, but think about what else you can get from each training evolution. Is it something about yourself, or is it how to work better within a crew? Is it both, or neither? Learn something outside of the box. Put yourself and your crew in the best position to handle what is thrown your way.

LT. LANG FLIES WITH VAQ-131.

HEAVENS TO MURGATROID,
My Pilot has Decompression Sickness!

BY LT. ADAM VANDENBOOGAARD

During a combat mission in support of Operation Enduring Freedom, in the skies over Afghanistan, our crew experienced something we had never imagined having to deal with. Although we had been trained and taught how to deal with symptoms of hypoxia, a less understood, less common, and equally dangerous physiological episode occurred. Decompression sickness (DCS) — one of seven "land as soon as possible" emergencies in the EA-6B Prowler and arguably the least understood —

was not something any of our four crew members had expected to encounter.

As we neared the completion of the mission, we smelled an acrid and pungent odor. We had to deal with the emergency procedures and tanking requirements. Adjusting altitudes also involved factoring in the NATOPS warning about DCS.

We completed the A/C FULL HOT/SMOKE/FUMES IN COCKPIT checklist. With the cabin pressure now matching the ambient altitude pressure at 23,500 feet MSL, we discussed continuing to the tanker and agreed that we would join, take a full on-load of fuel, and determine the next course of action. ECMO-1 requested the tanker descend to a lower altitude to provide a greater buffer from the 25,000-foot MSL threshold that NATOPS warns about: "Decompression sickness may be experienced when operating in an unpressurized cabin above 25,000 feet MSL." The NATOPS note explains the symptoms of decompression sickness and lists them as, "pain in joints, tingling sensations, dizziness, paralysis, choking and/or loss of consciousness."

After completing the rendezvous and getting established in port observation, our pilot told the crew that he "didn't feel right." The crew discussed his comment and asked if he was comfortable with continuing the aerial refueling or if he felt he needed to knock it off. He said he was comfortable tanking and wanted to proceed.

> Decompression sickness (DCS) — one of seven "land as soon as possible" emergencies in the EA-6B Prowler and arguably the least understood — was not something any of our four crew members had expected to encounter.

The pilot initially experienced difficulty getting in the basket and began to get uncharacteristically angry at his inability to plug. He's normally a very easy-going, light-hearted person. After successfully getting in the basket and taking 5,000 pounds of gas, the pilot stated, "I can't do this." He backed out of the basket and maneuvered to the tanker's starboard observation position. He told the crew that he felt a tingling on the back of his legs and top of his forearms. We know that these symptoms were consistent with decompression sickness, so we checked the emergency procedure for Cabin Pressure Failure. The checklist dictates that if any symptoms are present, the aircraft shall land as soon as possible.

The combination of an unpressurized cabin (even below 25,000 feet MSL), the pilot feeling "tingling sensations," his significantly out-of-character demeanor while trying to tank, and his admission that he couldn't continue all reinforced DCS. Once clear of the tanker, I directed the pilot to begin a descending turn toward Kandahar and declared an emergency.

Knowing that my pilot was preoccupied with his symptoms, and in an effort to make sure we were as prepared as we could be to divert and land ashore after nearly six months of carrier operations, I used the transit time to Kandahar to discuss the airfield particulars between the crew. We covered the high elevation, runway length and particulars, field and runway lighting, minimum safe altitude (MSA) and obstructions near the field, as well as the NAVAID location.

I MADE A CONCERTED EFFORT to engage my pilot in conversation so I could continuously assess his fitness to fly. We discussed the differences between an ashore and shipboard landing, which included the necessity of aerobraking upon touchdown, and noted that the aircraft had carrier-pressurized tires. We reviewed the HI ILS approach, which had been the same approach that was discussed in the pre-flight brief. The pilot made an uneventful approach and field landing at Kandahar Air Field.

Knowing your pilot or wingman's nuances and using all available means to continuously assess their airworthiness were critical tools used by our crew. Flying a multi-placed aircraft was a huge plus.

LT. VANDENBOOGAARD FLIES WITH VAQ-131.

Mayday, Mayday, Mayday! Lake 23 Is Down!

BY LT. BRYAN LINGLE AND LT. RYAN TAGGART

Emergencies and contingencies are covered as part of our standard flight brief. We brief to basic procedures, but we seldom focus on scenarios or contingencies we're unlikely to encounter. As the briefer of a 1 v 1 dissimilar air-combat-training (DACT) mission, we had one of those unlikely scenarios. We were to fill the role of on-scene commander (OSC) as part of a search-and-rescue (SAR) mission.

Here's how it came about. Two weeks into our scheduled nine-month cruise, a few of us had a unique opportunity: basic fighter maneuvers (BFM) against a French Rafale launching from the French aircraft carrier FN Charles De Gaulle. The Dassault Rafale is a single-seat, delta-wing fighter with forward-mounted canards. Much like the FA-18, the Rafale is a multi-role aircraft with a digital, fly-by-wire, flight-control system.

We were briefed on basic admin procedures, training rules and provided rendezvous points in a mass brief in the carrier intelligence center (CVIC). We then broke off to brief the specifics of the mission as single aircraft. We covered admin items and the standard litany of emergencies, including our BFM game plan.

It was a calm, clear day in the western Mediterranean Sea as we climbed into our FA-18F. Our call sign was Victory 11. As we climbed above the ship to meet our tanker, we could see the southern coast of Spain. We were ecstatic about the mission.

After receiving 2,000 pounds of organic gas, we joined on our adversary, call sign Lake 23, at the planned rendezvous point at 15,000 feet. We took the lead from Lake 23 and moved the flight into the briefed formation.

The following is a play-by-play of the engagement:

Victory 11 maneuvered the formation to a westerly heading and set the proper position, altitude and airspeed to commence the BFM engagement. The setup proceeded as briefed and culminated in a left-to-left pass at 15,000 feet at 1455L. Lake 23 maneuvered nose-high, while Victory 11 maneuvered oblique nose-low in a left-hand, two-circle engagement. Through a series of follow-on merges, the fight developed into a flat scissors, with Victory 11 at 6,800 feet and Lake 23 in an offensive position.

Victory 11 then maneuvered to force a flight-path overshoot from Lake 23. This resulted in a neutral pass set by Lake 23 calling, "Lake 23, low."

Victory 11 acknowledged with, "Victory 11, high."

At this pass, Victory 11 was at 6,100 feet, 135 knots, wings level, and 37 degrees angle-of-attack. Separation between the two aircraft was 500 to 1,000 feet in the

We couldn't believe that we had just witnessed an ejection. The time between the "Fight's on" call and Lake 23 landing in the water was about three minutes — it felt like a matter of seconds.

vertical and less than 1,000 feet fore-and-aft. From the perspective of Victory 11, Lake 23 crossed from the right 4 o'clock position under the tail to the left.

Victory 11 then reversed left toward fight center. We rolled into a left 45-degree, angle-of-bank turn at 5,800 feet, 130 knots, and 34 degrees angle-of-attack with Lake 23 at Victory 11's left 9 o'clock. Lake 23 tried to reverse to the right toward fight center. Victory 11 then saw Lake 23's aircraft yaw sharply to the left, rapidly transitioning from a nose-high to a nose-low attitude, and begin a rapid descent. Following the apparent loss of control of his aircraft, Lake 23 quickly called, "Knock it off."

LAKE 23 CONTINUED TO DESCEND rapidly in a flat attitude and extremely high angle-of-attack. Victory 11 recognized that Lake 23 was still out-of-control passing 2,000 feet.

Victory 11 called to Lake 23, "Recover, recover!"

Victory 11 then observed Lake 23's ejection, estimating it to be below 1,000 feet. Victory 11 observed one good parachute deploy and saw it enter the water.

We couldn't believe that we had just witnessed an ejection. The time between the "Fight's on" call and Lake 23 landing in the water was about three minutes — it felt like a matter of seconds.

At 1457L, Victory 11 marked the downed aviator's position and transmitted a Mayday call to FN Charles De Gaulle and USS Dwight D. Eisenhower (CVN 69). Victory 11 assumed the role of OSC and retained it for the duration of the rescue effort.

Working through strike aboard USS Dwight D. Eisenhower, Victory 11 coordinated the sortie of the SAR helicopter, call sign Navy 617. Victory 11 also tried to hail Lake 23 on SAR common, 282.8 MHz. At 1505L, eight minutes after his ejection, Lake 23 made contact with Victory 11 using his survival radio on UHF guard, 243.0 MHz.

Lake 23 passed his condition as "OK" overall but voiced concern about his back. Victory 11 informed Lake 23 that the SAR helicopter was inbound. Navy 617 arrived on station 10 minutes later, having been in visual contact with the crash site from two miles away. After circling once overhead, Navy 617 settled into a hover near Lake 23 and sent their SAR swimmer into the water.

Navy 617's swimmer spent the next 15 to 20 minutes in the water with Lake 23, while Victory 11 continued to relay information between Navy 617, FN Charles De Gaulle and USS Dwight D. Eisenhower. When directed by the swimmer, Navy 617 hoisted Lake 23 out of the water on a rescue litter. Once aboard the helicopter and in stable condition, Lake 23 was flown back to FN Charles De Gaulle and Victory 11 stood down as the OSC.

During the debrief, we identified three major factors that were critical to the rescue of Lake 23: maintaining visual contact with the survivor in the water, timely and effective communication and directing Lake 23 to recover his aircraft.

One of the two most basic and vital functions of the OSC is maintaining situational awareness to the survivor. On this day, we were blessed with a clear skies and minimal sea states, which allowed us to orbit overhead at the standard 2,500 feet. High sea states would have challenged the recovery effort, as the SAR helicopter may not have had visual contact with the survivor at range (by the time the helicopter arrived the parachute had sunk, and most of the oil and fuel slick had dissipated from the surface). In this instance, the OSC would have had to vector the helo all the way in until they were on top of the survivor.

The other critical function of the OSC is the timely communication of the right information to facilitate a speedy recovery of survivors. Victory 11's Mayday call and immediate communication of the survivor's position to IKE strike enabled the SAR helicopter to head to the crash site within two minutes after Lake 23 hit the water. The flow of communication regarding Lake 23's status facilitated the decision to take the pilot to the French carrier for treatment. Also, Victory 11 acted as a relay for Navy 617, with much of the comm taking place on UHF guard.

The last immediate action item for an FA-18F in out-of-control flight (OCF) is, "Passing 6,000 feet AGL, dive recovery not initiated, eject."

I'm sure the Rafale has a similar emergency procedure. As our BFM engagement had us fighting just above the hard deck between 5,000 and 6,000 feet AGL, this procedure should be initiated immediately upon loss of control. Knowing our emergency procedures and the close proximity to the water, we should have been yelling for him to "Eject, eject, eject," much sooner, rather than yelling for him to "Recover!"

We like to think that he would have ejected without being prompted on the radio, but who knows. Better late than never. The boldface emergency procedures are there to save lives and should be followed without question, even if it's not your jet.

The standard emergency spiel that we cover before every flight should be individually reviewed indepth from time to time by every aviator, including how he or she would react to certain situations. Watching the Rafale pilot depart his jet, call the "Knock it off," and fight to regain control until it was almost too late is a sight that we will never forget.

LT. LINGLE AND LT. TAGGART FLY WITH VFA-103.

Right Place at the Right Time

BY LT. TIM STONE

The weekend was planned as a good-deal trip from Jacksonville, Fla., to Tucson, Ariz. We were to talk to University of Arizona NROTC midshipmen about aviation and Navy careers. Our crew would also provide a static display for those interested in aircraft tours. We had eight students and a full tactical crew of fleet replacement squadron (FRS) instructors. We planned to conduct multiple training events en route.

The flight path to Arizona took us through the middle of the Gulf of Mexico, so the nav students and pilots could make radio calls, plot points, and practice long-range HF communications with ATC. The positions of multiple ships in the water were noted in case we found ourselves in an emergency and needed to ditch. We discussed ditching procedures as well as numerous other emergencies. Students and instructors reviewed several scenarios and how the aircraft would be tactically employed in each situation — good training for all.

Search-and-rescue missions are well suited for P-3s because of their range and endurance while on-station. Every instructor on our aircraft had been involved in several SARs, and these scenarios are covered on every PPC and TACCO qualification board. While most SAR missions are over water, several crewmembers had flown combat SAR missions in Iraq and Afghanistan. We spent a lot of time discussing SARs en route Arizona.

After we landed and gave the midshipmen an aircraft tour, we went to the university to brief the NROTC students. We were asked to recount some of our most memorable or exciting missions. Our skipper told a story about how he had been on a SAR mission where a boat had sunk. The 24 people were spread out over several miles in the ocean, with no life rafts or flotation devices. His P-3 crew sent out their rafts and life preservers. Altogether, 15 of those in the water came out alive because of his crew's actions. This, he said, was the mission that stuck with him most out of his 22 years of service in the Navy.

Fast forward 30 hours. Our crew readied the aircraft for our flight home to Jacksonville. We checked weather and NOTAMS. We departed VFR for a tour of Davis Monthan AFB and the "Bone Yard." After picking up our clearance, we headed east. We were switched to Albuquerque Center as we passed through FL180.

WE HEARD A "MAYDAY" CALL over VHF guard. A man gave a rough estimate of where an aircraft had crashed. Breathing hard, he said there were injuries on board

and that he needed help right away. While details were sketchy, a rough plot by the off-duty pilots and navigators found that our P-3 was 80 miles southeast of the position given by the caller. There was no accurate location of the downed plane, and no other asset was quickly available for search and rescue. We relayed to center that our aircraft could initiate a search to locate the downed airmen.

The instructors took their crew positions and put the students on auxiliary headsets. Rough points were plotted to fly an initial heading. Information was passed to ATC as it became available from the distressed aviator on the ground. We picked up distress calls from the aviator's weak hand-held radio. He passed information on the status of those needing medical help, his aircraft call sign, type of aircraft and souls on board. He had been in a powered hang glider (an experimental aircraft). His brother had crashed in the same kind of plane in front of him.

The pilot we were talking to had made a hard landing in his plane in a clearing beside his brother, so he could provide medical treatment and assistance. His landing had damaged his plane beyond repair. We had one injured aviator needing medical evacuation and another trapped high in the Arizona desert.

Using every asset on board to find the downed airmen, we posted observers in every window, pointed the camera at anything in range, and tried to DF the emergency beacon blaring on VHF guard. We even tried to call the downed airmen on a cell phone number he passed on guard, because his radio communications were so broken. Our navigators and TACCO created a search area and gave coordinates to the pilots. Only necessary comms were exchanged, and everyone naturally fell into their roles. Our students were getting real-world training.

After flying for 30 minutes in the rough vicinity of the crash site, the distressed airmen said he saw our aircraft. He vectored us in on his position until we were on top of him. We marked the position on the GPS and got our "eyes" on him through our onboard camera. Our pilots set up an orbit over him and switched to a discreet frequency. We got an update on their status and other amplifying information for rescue personnel responding by helicopter.

Up to this point, all the information had been muddled and confusing, and there was no accurate picture of their situation. We passed to authorities an accurate location of the downed airmen and their respective conditions. As the first — and only — long-range asset to assist in the search, we became the on-scene commander for the rescue effort.

Albuquerque Center passed our report to rescue personnel from Phoenix, who launched a helicopter to assist. The helo crew contacted us, and our camera operator vectored them to the site. After 45 minutes, the rescue helicopter reached the scene.

WE STAYED OVERHEAD UNTIL CLEARED to leave by center. We picked up an alternate clearance to a nearby military airfield. After refueling, we were ready to head to Jacksonville. With our new flight plan, we were briefed about a line of thunderstorms that had developed east of our location. Tacking on the additional flight time from the SAR effort, our 5.5 hour flight became a 9.3 hour flight with a fuel stop in the middle. Fatigue became a concern for us, and we concentrated on time critical ORM and CRM.

After we landed in Jacksonville, we learned that only one of the two downed aviators had made it alive out of the high Arizona desert. He had succumbed to his wounds before reaching the hospital in Phoenix. The man who had made the distress call had left a message on my cell phone asking that I call him back. He had my name and number from when I had left him a message while trying to search for his aircraft earlier in the day.

I called him back. He thanked us for rescuing him and for giving his brother a fighting chance at survival. He was obviously emotional, and he was very thankful that we were at the right place at the right time. He was surprised that we'd found his aircraft so fast — he'd felt like a needle in a haystack.

The events and lessons of that day will forever stick with the students and instructors. Adaptability and flexibility, communication, leadership from an experienced crew, and quick decision-making were reflected in the actions of all on board.

LT. STONE FLIES WITH VP-30.

Amarillo by Morning

BY LCDR. MATTHEW PICINICH

"Amarillo by Morning" is a famous song written by Terry Stafford and Paul Fraser. Little did we know, we'd be downloading the song later in the day.

Leaving home a day early for a detachment was already a rough start to what would become an eventful day. We were departing Norfolk for a training detachment in Fallon, Nev. The schedule was moved up a day because of a severe, winter storm approaching the East Coast. Even with the early departure, we would feel the effects of the leading edge of this storm for the majority of our flight.

Due to the IFR weather covering the eastern half of the country, our three aircraft would go as singles separated by 15 minutes to our first stop in Missouri. I was the copilot and aircraft commander of Dash 2, about 70 miles behind our lead aircraft at 24,000 feet. Though we had been in solid IMC, the icing was light and our lead plane was not reporting anything significant. All of the sudden, our aircraft started shaking violently, and our advisory panel lit up like a Christmas tree.

I asked for an immediate climb to clear the weather and activated every anti- and de-ice system. We cleared the clouds just barely at 26,000 feet and noted the aircraft had very little ice buildup. We quickly concluded that one of the props must have iced up. But, we could not see it, and after an hour with the prop de-ice on, the vibration slowly dissipated. We notified our lead aircraft, who was still at 24,000 feet and experiencing no issues. Our trail aircraft decided to follow us up to 26,000 feet to avoid the same problem.

As far as I was concerned, this was enough excitement for one day. I was hoping the second leg would be trouble-free. After a quick turnaround in Missouri, we got airborne in the same order for our second, and final leg of the day to New Mexico. We asked for an early climb above our filed altitude to remain clear of the clouds. This leg was proving to be more scenic as we cleared the western edge of the storm. About 200 miles from our destination, the pilot pointed at his windscreen and told me that it looked like it was delaminating.

All of the sudden, our aircraft started shaking violently, and our advisory panel lit up like a Christmas tree.

Unlike a bubble canopy, our windscreens are flat, two-paned pieces of glass with a heating element in between them. The heating element provides us anti-icing and defogging and makes the glass more resilient by heating it in flight. Occasionally, this heating element will fail, or a bubble will develop between the panes. I've seen both conditions, but not in the catastrophic way I was about to experience.

Within a few blinks of the eye, the rapid delamination shattered one of the panes. We were at 26,000 feet, indicating 200 knots, and about to have an open window in the cockpit. The pilot was ducking underneath the glare shield to protect his face. I requested an immediate descent while taking the controls and donning my oxygen mask. The pilot and crew donned their masks, and my mission commander started the emergency procedure.

The next few minutes were hectic, but a lot of stars lined up for us over the Lone Star state. A few weeks earlier, our squadron began outfitting our aircraft with Iridium satellite phones that gave us chat and voice capability. Even though my plane had not received the retrofit, our lead and trail aircraft did.

The pane of glass that broke was the outer pane, which makes the decision-making process go from "land as soon as possible" to "land as soon as practicable" with no airspeed or pressure limits.

My mission commander relayed our situation to the other aircraft, while I talked with ATC. Albuquerque Center offered up Amarillo, Texas, but we were unsure of what servicing equipment they had. We do not have self-start capability, so choosing a divert field with the appropriate starting equipment is very important. Within a few minutes, via Iridium, our squadronmates had called the FBO at the airport and learned they had the necessary equipment for us. Because of the severity of the shattered window, our crew decided to go to Amarillo instead of continuing 200 miles to Albuquerque. Once at a safe altitude, the pilot took the controls back, and we continued to an uneventful landing.

The debrief yielded many positive learning points. A cracked outer pane of our windscreen is a "land as soon as practicable" emergency. However, the word practicable may not apply when you are 1,000 miles from home base. The closest field was just as suitable as our destination field, and the risk of continuing for 200 miles with a windscreen of uncertain integrity was not worth the gain of making Albuquerque.

Good CRM within our plane and with the other crews was vital. Communicating with ATC, working through an EP, and finding a suitable divert is a challenge. Our wingman lightened our workload, allowing us to work the checklists, discuss options and make informed decisions.

When our maintenance crew arrived two days later, they said it was the worst shattered window they had ever seen. That validated our decision to get on deck at the nearest suitable airfield. Had the inner pane also shattered, the outcome would have been considerably different and probably tragic.

LCDR. PICINICH FLIES WITH VAW-124.

BRAVO Zulu

HMLA-467

A UH-1N crew was scheduled for a pre-WTI (weapons and tactics instructor) training flight. Captain Adam Trout, USMC, was the pilot in command (PIC) with Capt. Eric Rogers, USMC, as his copilot. Staff Sergeant Cameron Baxter, USMC, was the senior crew chief with Lance Corporal Andrew Boothe, USMC, in the back. The two passengers were a CH-53 pilot and a PAO representative.

During takeoff from MCAS Cherry Point, N.C., the pilot asked for the No. 2 side-cargo door to be shut. While closing the door, it dislodged from its lower track and began to fall off the aircraft. Lance Corporal Boothe grabbed the door and used his leg to pin it back to the aircraft. He called for the pilots to slow and land.

The aircraft was configured with an auxiliary fuel bag and a five-man bench, which caused LCpl. Boothe to hang out the side of the aircraft to maintain control of the cargo door. The pilots quickly told tower of the situation and turned back to the runway. Once they set down, Lcpl. Boothe reset the door and they continued with the mission.

LCpl. Andrew Boothe

VT-10

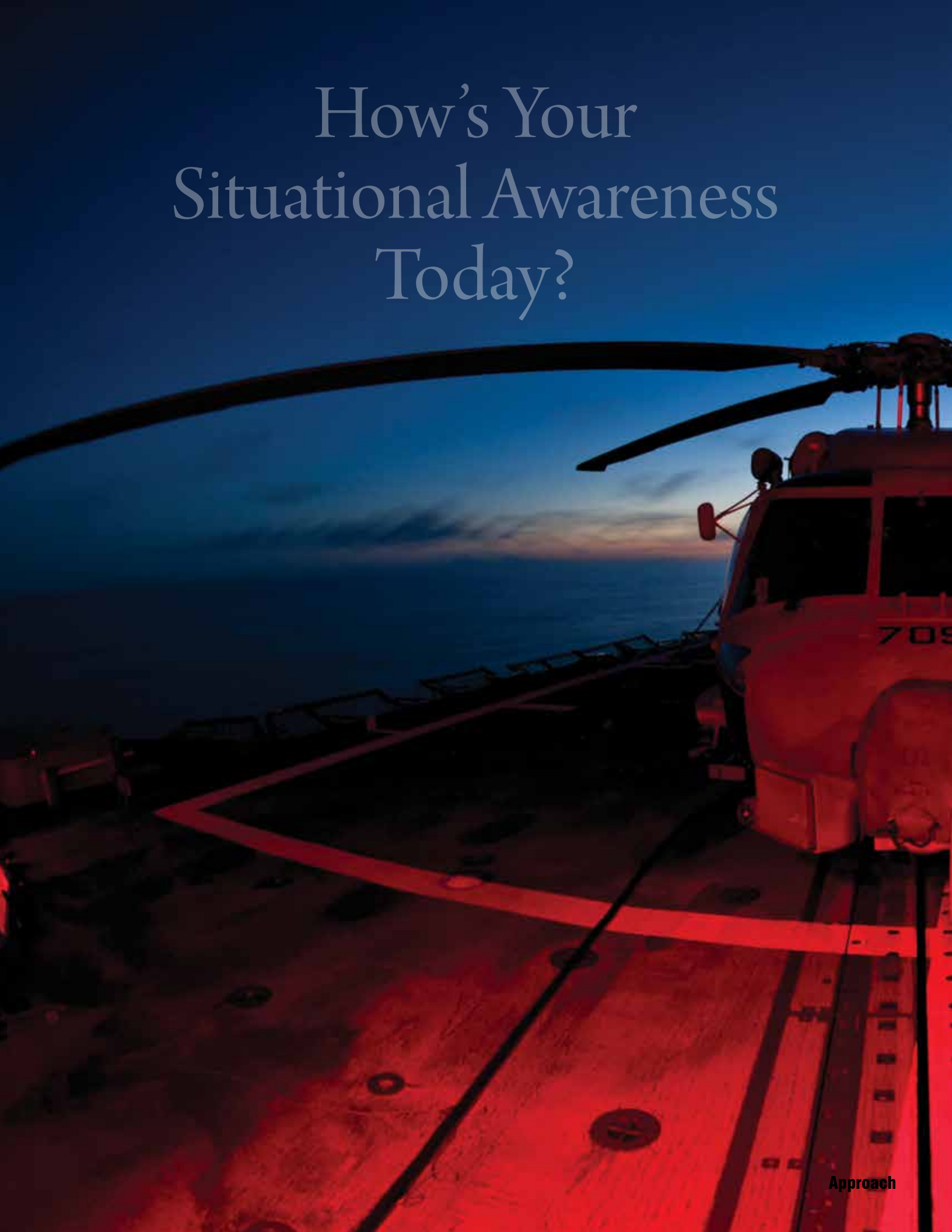
Captain Daniel Kinnecom, USMC, a flight instructor with VT-10 at NAS Pensacola, Fla., was flying with a student naval flight officer (SNFO) on a T-6A, day contact flight. While demonstrating a spin using full right rudder, Capt. Kinnecom felt the rudder pedal suddenly give way as if the control stop had released. He immediately executed a spin recovery and confirmed the rudder pedals in both cockpits were affected.

Following NATOPS procedures for a flight-control malfunction, he began a controllability check. During the check, the right rudder pedal didn't work and both pedals froze in the centered position. Captain Kinnecom declared an emergency. Without a useable rudder, he made a straight-in landing at NAS Pensacola. The crew applied differential braking to clear the runway and then shut down the aircraft.

A failed snap ring allowed the rudder-pedal interconnecting rod to slide out of its attachment, which caused the rudder pedal to fail.

Capt. Daniel Kinnecom

How's Your Situational Awareness Today?



"**Reflecting on the events** of the morning, I have a great appreciation for the capabilities of my chosen community. The strike group trusts LAMPS to be its eyes and ears." – Ltjg. Ryan Rose, HSM-51.

Traffic 1 O'Clock

BY CDR. DAVE KURTZ

With 360-degree views of mountains and water, there may be no better place to fly than Whidbey Island, especially on a sunny, cloudless day. The icing on the cake is when pylon maintenance forces you to slick your EA-18Gs and fly basic-fighter-maneuver (BFM) counters for training, readiness and tactics quals for an entire week in beautiful weather.

By day four, I had completed two 1 v 0 warmups and a perch set event. The next flight was a high-aspect event. After four quality sets practicing how to defend ourselves in a worst-case scenario, we knocked it off and exited the Olympic Military Operating Area. We then headed VFR east and up the Strait of Juan de Fuca for the break. We had been taking advantage of the good weather all week to minimize the gas and time used on the backside of events by heading directly back to the field.

Area traffic was heavy, but local aircraft, military and civilian pilots are used to operating around the busy Whidbey airspace. Deconfliction of traffic is not normally a problem.

On this recovery, the pilot and I were in the lead jet. We directed the section south of the field to set up for a left turn over the initial and into the break for runway 25. When we were at 25 miles from the field and at 7,500 feet AGL, Whidbey Approach gave us an advisory traffic call for a Learjet at 7,000 feet, 16 miles at our 1 o'clock, northbound.

I replied, "Looking," as I scanned the horizon and checked my radar.

The Learjet was also VFR and was monitoring VHF (we were UHF), so we heard approach call our position to the contact. We got radar lock on the contact moving right to left across our path on a vector that would not have been a factor.

On the next advisory call, we replied, "Radar."

We saw the contact on the radar change direction toward us and descend. The pilot and I decided to deconflict low, since we had to descend to 2,500 feet

At six miles separation, the contact was still heading toward us and descending.

for the initial anyway. I followed up the radar call with a call to approach that we were descending to 3,500 feet—the lowest eastbound VFR altitude that would allow us to correctly enter the initial. Now that the contact had turned westerly, we expected at least 1,000 feet of altitude between us.

We heard Whidbey Approach simulcast our new altitude to the contact but didn't hear their response. Maintaining our scan between the section and other traffic, and trying to find the contact visually, the section proceeded toward base. At six miles separation, the contact was still heading toward us and descending.

All eight eyes were now scanning the target designator (TD) box hoping to get a tally. After hearing approach tell the pilot our new altitude and not hearing a repeat call, I assumed the Learjet had heard the altitude and would take a westbound VFR altitude above us. But, the radar kept showing collision bearing and descending altitude, still about 4,500 feet.

Finally, at 2.5 miles, the wing pilot got a tally and called over the radio, "I got him, he looks like he's going to be a factor."

My pilot dumped the nose and told the wingman, "Descending," as we watched the radar altitude delta indicate .1 (100 feet above us).

IT GOT AS CLOSE AS .5 MILES on the wingman's radar lock. Looking back over our left shoulder, the wing EWO and I got sight of the Learjet in a climbing left hand turn. He hadn't seen us until the last second.

When we reviewed the tapes from our aircraft and with approach, we noticed that our altitude call was relayed and rogered by the Learjet. He continued to descend and turn toward us anyway. We later learned the Learjet was on a profile to certify the ILS approach at Boeing's Paine Field in Everett, Wash. Those certification flights are a regular event. Whidbey Approach said these flight profiles are usually done under IFR control, and they have priority handling because of the specific nature of the profile. We were unable to contact the company, so we can only assume that the Learjet pilot flew as if it was the priority and disregarded the advisory calls being made.

The Whidbey Approach tapes also show a flashing, red collision warning. This indicated the ATC system believed our flight and the Learjet were on a collision course, but we never heard this from approach. However, we were both VFR, meaning the onus was on us to see and avoid.

We certainly were not free of blame. If we had deviated five degrees to the left or right as soon as we saw the contact turn toward us at 14 miles on radar, we would never have gotten close. I made a terrible error in assuming that if we maintained a predictable profile and broadcasted our eastbound VFR altitude, the Learjet would level off at a westbound VFR altitude for deconfliction. I absolutely assumed that once we told him where we would level off, he would choose not to continue descending — that's what I would do. That assumption could have been fatal.

VFR is see and avoid. We saw but didn't avoid until almost too late. We are trained and trusted to be proactive. This incident reinforced the lesson that it is dumb to wait for traffic that is a factor to do something smart. Act early, maneuver to ensure separation, and avoid passivity that will lead to close calls or worse.

CDR. KURTZ FLIES WITH VAQ-132.

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PERCEIVED PRESSURE

BY LCDR. MATT PERSIANI

Put yourself in this scenario. As a new department head, you're about to begin the final battle problem of COMPTUEX. Your long and exhausting workup cycle is days from coming to an end. The air wing commander (CAG) is a steely-eyed fighter pilot, who easily could give Matt Foley a run for his money as a motivational speaker. He has you so pumped up after months of speeches that you look forward to flying that planeguard line with a knife in your teeth.

After HARP, Air Wing Fallon, two TSTAs and a COMPTUEX, you intimately know each of your squadron's aircraft. You know each of the little quirks you can expect on any given day. One aircraft's No. 1 fuel-pressure light comes on for a split second every time you lift into a hover off the flight deck. You aren't too concerned because this has been an outstanding gripe in the aircraft discrepancy book (ADB) for months. You've also seen this situation in other aircraft in previous squadrons with no issues.

The night before the final battle problem CAG calls on the skipper's brick and asks if your squadron is capable of executing immediate round-the-clock operations. Before you can answer, CAG says, "I know you are, meet me and the commodore in the DESRON spaces for mission planning. You start flying in two hours."

As the squadron training officer, you and the operations officer rush to meet CAG and figure out how you're going to execute round-the-clock surface surveillance of the vital area. CAG starts with passing the admiral's intent. He inevitably transitions into one of his "Van down by the river" motivational speeches that gets your blood pumping. There was even Latin involved. In his speech, he forcefully yet eloquently tells you how critically important the operations are, and that this mission is an "absolute no-fail situation."

Once operations began, you recognize just how important this mission is for your squadron. Your normally calm, cool and collected skipper starts to quote CAG. He even seems on edge as he hawks the SDO and maintenance-control desks. After the first flawless 24 hours of continuous operations, it's your turn in the barrel.

It's a hot and humid day off the coast of Jacksonville, Fla., but otherwise it's a beautiful day to go flying. After

the first hour of your nearly four-hour flight, the vital area seems secure. You head back to the carrier to make a log run for the three-star admiral, who is monitoring the CSG's final evaluation. You bring him to one of the destroyers that is only three miles off the carrier's beam.

As you approach the flight deck, transition to a hover and wait for the LSE, the No. 2 fuel-caution light flashes for a split second. The landing is made with no problems, and the cockpit remains "clean and green" for the 30 minutes you sit on deck waiting for the admiral. While waiting, you bag out the fuel for the rest of your mission. You break out the pocket checklist (PCL), read the emergency procedure for the No. 2 fuel-caution light, and have a crew discussion regarding the situation. Nobody has any issues with continuing the mission; everyone has seen the fuel-caution light flicker on other aircraft.

The mission continues as you fly the admiral to the destroyer and land; the admiral disembarks. As you call for breakdown and launch, the No. 2 fuel-caution light comes on and remains steady. The crew completes the emergency procedures and is now in a "land as soon as practical" situation on deck.

These questions go through your mind. Do you takeoff and go back to the carrier, which you can see from where you're sitting on the destroyer? Do you shut down and clobber the destroyer's flight deck, which has an SH-60B detachment also flying in support of the "absolute no-fail situation?

If you shut down, you will cause a gap in your squadron's coverage. You would be the sole reason why the squadron fails the assigned mission that has been stressed as vital to the CSGs success. On the other hand, an aircraft and crew stuck on the deck of a DDG locking the flight deck would also equal a mission kill.

What do you do?

Here's how it played out. After a CRM discussion among the crew, there were no objections with taking off and heading back to the carrier for troubleshooting. The chocks and chains were removed and as the tower made the radio call passing a green deck for launch. The No. 2 engine failed because it was starved of fuel. If that engine had shut down 15 seconds later as the aircraft crossed the flight-deck edge, the crew would have gone swimming.

As it turns out, executing the No. 2 fuel-pressure emergency procedure is what caused a fuel leak and the inevitable failure of the No. 2 engine. When moved, the No. 2 fuel-selector lever felt stiff — other pilots and I had noticed it on previous flights. We did not consider it to be sufficient enough to write a maintenance action form (MAF). That stiffness was an indicator of the impending failure of the faceplate that held the cross-feed valve to the side of the aircraft. The alignment of the Swiss cheese holes well underway before the mission even started.

An aircraft and four aircrew were a few seconds from a life-and-death situation because of the way the helicopter aircraft commander (HAC) interpreted the pressure from the chain of command. In this scenario, the failure and breakdown does not lie with the chain of command, but with the HAC. As the HAC, it was my job to decide where the line exists between safety and operational necessity. I pushed that line too far toward operational necessity, when ultimately it was just a training scenario. This is one reason why on our CRM/ORM analysis conducted before every flight, we often call attention to a department head in the cockpit and acknowledge seniority and cross-cockpit rank gradient.

As the HAC, it was my job to decide where the line exists between safety and operational necessity. I pushed that line too far toward operational necessity, when ultimately it was just a training scenario.

My 11 years of flying experience made me overconfident. I figured that the reliable H-60 would fly me three miles to my home ship as it always has. I was too heavily influenced by the perceived pressure from the chain of command. Perhaps a new H2P or HAC with fewer inputs from the outside world, and more inputs from NATOPS, would have made the smarter decision to shut down.

LCDR. PERSIANI FLIES WITH HS-5.

Editors note: Unless you are in a combat environment, any decision for exercising "operational necessity" should be made at or above the unit CO level.

JammingtheMusic

BY LT. MIKE LEHMAN

If you went through flight school during the past 50 years, you are probably intimately familiar with this text:

> **"No manual can cover every situation or be a substitute for sound judgment; operational situations may require modification of the procedures contained therein. Read these publications from cover to cover. It is your responsibility to have a complete knowledge of their contents."**

As I've undergone the painful process of graduating from greenhorn naval aviator to experienced P-3 aircraft commander, I've started to see the wisdom in those sacred words.

Recently, I was on a dedicated-field-work (DFW) flight with a senior JO instructor pilot (IP). We decided to beat up the GCA pattern for a while. After I greased a few passes in the box, the IP took the controls for a few passes.

When we turned base, the IP configured the plane by selecting approach flaps and dropping the gear. As I reached for the laminated checklist on the glare-shield of the cockpit, the plane started to violently shake. It shook so hard it felt as if it was going to shake the teeth out of my skull.

The IP initially made the connection between a change in configuration and the vibrations — he had put the power in the bucket to drop below the max airspeed for approach flaps. He quickly executed the procedures for stall recovery in response to what seemed to be an approach-turn-stall buffet. However, the procedure seemed to worsen the vibrations. A scan of our instruments showed that we were well within the safe envelope of flight.

I glanced at the IP, and we exchanged mutual looks of "What now?" I forced myself to break through the tunnel vision that is usually present at moments of sheer terror.

As we continued on our GCA box vector, I looked around the cockpit and out at the engines. Something far from ordinary going was on with the No. 2 prop. In what is usually a solid black sweep where the prop uniformly cuts through the air, there appeared to be a flash of blue sky during every rotation.

I'll avoid the snooze-fest that usually ensues when Orion drivers start talking about propellers and throwing out such sparkling catch phrases as "fluid reliability" and "centrifugal twisting moment." I'll instead make these two points:

1. Whenever anything starts happening with a prop on a P-3, the pucker-factor increases exponentially.

2. Without an associated annunciator light, fluid leak, or change in engine rpm, there is no specific reference in NATOPS that covered what I saw.

As the vibrations became intense and loud, communication in the cockpit deteriorated rapidly. We had to shout to be heard above an airframe that seemed to be shaking itself to pieces. My first challenge was to communicate what I saw. I think I distilled it in this eloquent phrase: "Number 2 is all messed up!"

MY NEXT CHALLENGE was figuring out what action to take. After a brief but loud conversation between me, the IP, and the flight engineer, we elected to secure the No. 2 engine by pulling the emergency-shutdown handle. The main idea behind our decision was that we needed to stop that prop from spinning before it killed us. We had to rely on our "sound judgment" in lieu of any specific procedure.

After we got the E-handle out, the vibrations ceased. When we completed the shutdown checklist, I noticed that one of the four prop blades remained in the flight range, while the other three fully feathered. Again, when the shutdown checklist calls for "PROPELLER — FEATHERED," we found ourselves in a situation not covered by "The Good Book."

The IP declared an emergency and requested a climb to the delta pattern. We conducted a slow flight-and-controllability check to see how the unfeathered blade would affect our approach and landing. We noted no significant changes in the flight characteristics. We cleaned up the lengthy laundry list of procedures, checklists, briefs and communications that such emergencies require. We then made a 3-engine, full-stop landing.

The postflight inspection and mishap investigation revealed the drive pins and screws that secure the aluminum-bronze bushing to the butt of the prop blade had failed in flight. This allowed the prop blade to vibrate freely in its bushing, detaching it from the feathering segment gearing.

Always be ready to adapt to the situation because every day, every plane, and every prop is unique. While it is always good to memorize your EPs and limits, we should also strive for a deeper understanding of how the systems work, so we can adapt to whatever the plane throws at us.

The greats of jazz weren't great because they knew the notes, but because they knew how to jam.

This is especially important in the P-3 community, where we fly an aging airframe that may present increasingly complex and unexpected malfunctions.

LT. LEHMAN FLIES WITH VP-45.

Don't Worry About That Little Guy

BY CDR. COLIN DAY

Our command was halfway through our Northern Arabian Gulf (NAG) deployment, and I was paired with one of our soon-to-be section leads. As a red-air asset, I would be Dash 4 in a 4 v 4 self-escort strike, with air-intercept control (AIC) provided by the boat. My Dash 3 completed the brief and would lead our portion of the event.

Recently, we had spent a lot of resources providing security for unmanned aerial systems (UASs) and other surveillance platforms. I was excited for this day's event because we'd be flying our Lot 12 FA-18Cs doing something more dynamic.

During the transit to our working area, the E-2C crew who was assigned backup AIC called us with an update. They said a friendly UAS was in the southern corner of our working area and tracking south at 16,000 feet. I asked for the Link-16 surveillance track number assigned to the UAS. I searched the network and located that track, which looked to be exiting the working area.

The E-2C crew headed to base because the boat's AIC folks were covering the events. I was comfortable with the presence of the UAS, particularly because the fighters' strike route was well north of its location. The boat's sensors also maintained a track on the UAS, so if things changed, they would certainly tell us about it. Right? Plus, the UAS was squawking Mode 3/C and on a predictable flight path leaving our airspace. Right?

Our division of red air operated in two sections, separated beyond visual range. Our altitude block for the ingress was 20,000 to 24,000 feet, with the fighters owning the 15,000- to 19,000-foot block. The ingress presentation went as briefed, with the fighters flowing north and the red air flowing south. The results were timely simulated deaths for Dash 3 and me.

The presentation for the fighters' egress required us to move down to the 10,000- to 14,000-foot block, while the fighters were in the simulated target area. Per the brief, my Dash 3 did this about 10 miles south of the fighters' egress flow point (EFP). He made a descending right hand turn, with me in a right-hand tacwing formation at 350 knots.

Passing through 16,000 feet, we simultaneously spotted a Predator no more than a few hundred feet in front of our formation. The Predator had an effective left to right track crossing angle that looked as if it would hit Dash 3 and, immediately after, hit me.

My Dash 3 instinctively maneuvered up and to the left, and I nosed over even more. The pass was over in a heartbeat. I estimate that we had no more than a second of response time to apply any inputs to our flight controls. The Predator passed the midpoint of our formation no more than 100 feet below my Dash 3, and about 50 feet above my aircraft. Demonstrating our superb standardization, we managed to choose the same expletive when we involuntarily keyed our AUX radios; there was no time available to warn each other.

We calmed down and warned the fighters that there was a Predator in the fighters' altitude block about 10 miles south of their EFP. We opted to continue the egress presentation and stay in our assigned block of 10,000 to 14,000 feet. Based on the separation between fighters and bandits, no further risk of collision existed between any of the FA-18s and the Predator.

I chose to continue the presentation. The fight was over a few short minutes later as we died bravely, and all aircraft headed back to mom. Before checking out with AIC, I told the controller that I wished to speak with him or his supervisor in our ready room after we landed.

The Predator passed the midpoint of our formation no more than 100 feet below my Dash 3, and about 50 feet above my aircraft.

I wanted to figure out what had happened and try to make sure it didn't happen again.

After the flight, I learned this was a Swiss cheese alignment.

A variety of shipboard watchstanders, including the E-2C crew, were in text-based chat with the Predator operators. The Hawkeye crew had told the operators earlier that eight FA-18s were en route, and they needed to get the UAS out of the airspace. The operators complied, and this was what the UAS was doing when we received the call that it was headed south, taking itself out of our airspace.

The Predator then had a maintenance problem requiring it to RTB; we didn't know this. The Predator's route for RTB took it back into our airspace and toward the strike route.

The boat had a normal, high-quality track on the Predator throughout the event. The Predator was squawking Mode 3/C after all, but the controller had been focused on the fighter activity in the simulated target area. He did not recognize the impending collision potential and did not provide an advisory or warning call to anyone.

The Predator was always there as a friendly surveillance track (it has no Link-16 capability of its own). Unfortunately, the FA-18 is designed to prioritize displaying neutral/ambiguous surveillance tracks over friendly tracks. Because the NAG has a large volume of civilian traffic, FA-18 surveillance-display limits are usually met, and friendly tracks are not shown. The only way for us to see the Link-16 track in this scenario was to manually search for it each time, something we wouldn't routinely do in the middle of a dynamic air-to-air flight.

Our trusty Lot 12 Hornets do not have airborne, IFF-interrogation capability or any traffic-collision-avoidance systems. This left us, in absence of AIC cueing, with only our eyeballs and our radar to detect the Predator. We did check our radar tapes after landing; no trons from our mighty APG-65 radars detected our little friend. Thank goodness for eyeballs.

As a result of this incident, we include planned UAS operating areas and times as a slide in our shipboard preflight briefs. Our strike controllers provide bearing and range to any and all UASs operating near the ship upon radio check-in. Our strike group AICs have a renewed focus on identifying interloper aircraft during training events and bringing those aircraft to aircrew attention early in the game.

We try to risk-manage the friendly UAS threat in the NAG during preflight and while airborne. I can't say that I'm particularly fond of having these little guys flying around at these altitudes overwater — it's airspace we usually consider to be ours and no one else's — but, the UASs are obviously needed. With a little coordination and situational awareness, the risk of midair is manageable.

CDR. DAY IS THE EXECUTIVE OFFICER OF VFA-97.

THE GUIDANCE

OPNAVINST 3710.7U, 8.3.2.5. All flight and support personnel shall be provided appropriate information by a command drug abuse education program.

OPNAVINST 3710.7U, 8.3.2.3.1. Nutritional Supplements. A nutritional supplement is a product taken by mouth that contains a "dietary ingredient" intended to supplement the diet. The ingredients in these products may include vitamins, minerals, herbs or other botanicals, amino acids, protein, and substances such as enzymes, organ tissues, glandular extracts, and metabolites. Dietary supplements can also be extracts or concentrates, and may be found in many forms such as tablets, capsules, softgels, gelcaps, liquids, or powders, and food bars. Harmful effects are often associated when used in very high doses or in non-standard manner, and virtually none are tested or assured safe in the aviation environment. The term "natural" does not mean it is safe. Flight surgeons (FSs) shall be consulted to assist with making informed decisions regarding nutritional supplements. The use of nutritional supplements of all types shall be reported to the FS and recorded during every periodic physical examination or physical health assessment (PHA).

OPNAVINST 3710.7U, 8.2.3.5.a.6. Nutritional/dietary and other OTC supplements/products – The use of nutritional/dietary and other OTC supplements/products by flight personnel except those approved by BUMED is prohibited.

WHAT'S GOING INTO YOUR BODY?

BY LCDR. LISA FINLAYSON, MSC AND MS. KELSEY LEO

Nutritional and dietary supplements are drugs, and you need to know how they affect you and your ability to fly. All aircrew want to perform at their best, which means knowing what goes into your body is essential.

OPNAVINST 3710.7U, Chapter 8, defines drugs as "any chemical that when taken into the body causes a physiological response." It lists six legal (medically prescribed or legally purchased for treatment) drug categories: prescription drugs, over-the-counter (OTC) drugs, alcohol, tobacco, caffeine, and nutritional/dietary and other OTC supplements/products. Although nutritional supplements are the newest of these categories, they certainly require the same attention for aircrew to use them safely.

Just like OTC medicines, nutritional supplements can cause allergic reactions and adverse interactions with other medications, alcohol and caffeine. The side effects can impair aircrew flight performance. Because energy drinks combine high levels of caffeine and other stimulants, they can manifest an undiagnosed cardiac abnormality or cause a serious cardiovascular response when used with other beverages.

Also, there is no requirement for the manufacturer of a dietary supplement to provide the Food and Drug Administration (FDA) with evidence of the product's effectiveness or safety prior to marketing, unless the product contains a "new dietary ingredient" that has not been part of the food supply. As a result, these products can be sold containing either unknown or mislabeled substances that pose significant health risks.

In 2009, several body-building products containing synthetic anabolic steroids were marketed as dietary supplements that would build muscle mass. When a series of adverse events (including serious liver injury, stroke, kidney failure, and pulmonary embolism) was connected to them, one company was fined $7 million.

Current law forces the FDA to remain reactive instead of proactive after many products have entered the marketplace. The law also provides minimal power to regulate the importation of other supplements.

In December, 2011, several bodybuilding and weight-loss products containing DMAA (known as "geranium extract," "1,3-dimethylamylamine," and 29 other names) were forced off the DOD store shelves after two soldiers died of heart attacks during physical training; DMAA was found in their toxicology reports. This substance has been used as a preworkout supplement and can contribute to heart attacks by elevating blood pressure. Complaints from DMAA users included kidney and liver failure, seizures, loss of consciousness, heat injury, rapid heartbeat, and muscle breakdown during exertion. Stars and Stripes publication continues to follow the FDA ban on products containing DMAA. The Army Public Health Command has conducted a safety review of this substance. Information on this review can be found on the Human Performance Resource Center website.

As far as military drug tests, it is possible to have a positive urinalysis test from dietary supplement use, because products may contain undeclared drug ingredients, such as controlled substances that are not stated or listed on the product label. Currently, United States Pharmacopeia (USP) and NSF International conduct third-party safety reviews to evaluate and authenticate the quality of a supplement. They look at the ingredients, the dosage levels, the level of contaminants, the label claims, and whether the manufacturing facilities follow good manufacturing practices.

When purchasing nutritional supplements, shop for products with the USP or NSF International seals. Be aware that some companies have similar names or logos to USP and NSF International, so look carefully at the packaging.

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References

For more information on nutritional supplements, visit these websites:

Stars and Stripes. www.stripes.com/news/dod-has-yet-to-release-findings-of-dmaa-study-1.212066

Naval Aerospace Medical Institute's (NAMI) online Aeromedical Reference and Waiver Guide. www.med.navy.mil/sites/nmotc/nami/arwg

Naval Safety Center website. Go to our Aviation page, then the Aeromedical page, then the Nutritional Supplements link. http://www.public.navy.mil/navsafecen/Pages/aviation/aeromedical/Aeromedical.aspx

Human Performance Resource Center. The DOD initiative under the Force Health Protection and Readiness Program. http://www.hprc-online.org

Food and Drug Administration. www.fda.gov/Food/DietarySupplements/default.htm

Key Points About Nutritional Supplements

Just because it is "natural," doesn't mean it is safe.

Just because you can buy it on base doesn't mean it is safe.

Virtually none of the products are tested or assured safe at altitude.

Harmful effects have been seen with use in very high doses or in a nonstandard manner.

Some may have beneficial effects for some people when used in moderation.

Remember that how it acts in your body and in flight may be different than in your buddy's body or on deck.

Talk to the flight surgeon before using a product to look for possible adverse interactions with your health or with other medications you're taking.

Before purchasing a product, look for the USP or NSF International seal on the packaging (see the seals below).

ORM corner

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Weather

A Form Too Far

LT. JED DOUGHERTY

We were onboard USS *John C. Stennis* (CVN 74) off the SOCAL coast at the end of a four week at-sea period for a sustainment exercise (SUSTEX). My squadron sent two aircraft back to San Diego to rebase their night, unprepared-landing (UPL) currencies. While the 45-day requirement keeps the pilot's landing abilities sharp, it presents logistical challenges when a unit is embarked on a ship. Because this was one of only a few chances to rebase during the exercise, it was important for us to complete the mission.

Weather had been marginal for most of SUSTEX, so we paid special attention to the metro forecasts during planning. Current conditions at the CVN and NAS North Island (NZY) were VMC, but we expected marginal weather along the route. We planned to fly as a section for mutual support.

I discussed the inadvertent IMC (IIMC) portion of the formation brief per our squadron SOP: If the flight encountered IIMC, each section member would turn away from the base heading/altitude for 170 degrees and contact the nearest controlling agency. Though we felt very comfortable with the SOP, we never discussed the criteria for breaking up the section and proceeding as singles before losing sight of lead.

We successfully rebased our landing currencies in the San Diego oparea. Two hours later, we returned to NZY for cold-fuel. In accordance with the original brief, we anticipated returning to the carrier in a two-aircraft section, with my aircraft as wing.

ATIS indicated North Island was VMC, but when we glanced to the west, the ceiling and visibility appeared mediocre. Still, everything seemed normal and besides, it wouldn't be the first time I flew form in marginal weather. My copilot — a cruise-seasoned helicopter second pilot with 490 hours — was at the controls. We departed along the ship channel and headed toward the carrier's last known location.

At 10 miles west of North Island, the section

According to the integrated-maintenance-diagnostic system (IMDS), we finally leveled off at seven feet.

climbed to 500 feet for radio reception with FACS-FAC. The higher altitude put the section just below the bottom of the marine layer, but visibility remained good. I maintained a link track on lead and used the forward-looking infrared radar (FLIR) to back up visual references. We were 8 to 10 rotor discs behind lead and had no trouble seeing them.

About 15 to 20 miles west of North Island the weather conditions began to deteriorate. The cloud deck was down to 300 to 350 feet and visibility was less than one mile. The section responded by descending to maintain VMC. At 8 to 10 rotor disks, lead was difficult to see. I directed my copilot to decrease distance between the aircraft. Lead reported descending to 300 feet.

Lead's position lights dimmed as the flight continued. Both my copilot and I believed the distance between the two aircraft was increasing. I again instructed my copilot to increase speed to close the distance. I double-checked the air-to-air TACAN; it was rapidly decreasing from .4 to .1 mile. In retrospect, the dimming lights must have been caused by the deteriorating weather conditions.

My primary references were the flight instruments and FLIR before I detected the rapid rate of closure. Noting the decreasing distance from lead, I looked outside to backup my copilot. Initially, my copilot had adopted a 50/50 instrument/visual scan, but he was now fixated on lead.

The on-again, off-again instrument scan gave me the leans. I perceived a wings-level attitude as my copi-

lot entered a right turn — he was executing a crossover to mitigate the rate of closure. Sensing he had the leans as well, I reported the right turn to him (at that time, the attitude gyro indicated roughly 20 degrees right wing down with no descent on the IVSI). Again, I momentarily switched to an outside scan to monitor the progress of the crossover. However, the position lights of lead appeared strange as we crossed what we perceived to be his six o'clock. I could only discern two position lights, arranged in a line along our direction of travel at the high 11 o'clock; they continued moving left and up on the windscreen.

I SENSED SOMETHING WAS WRONG, and my eyes snapped back to the instruments. The attitude gyro indicated we were 50-degrees right wing down and 15 to 20 degrees nose down, while the IVSI showed us descending at 1,500 to 2,000 fpm with radalt passing 200 feet.

I immediately took the controls and executed unusual-attitude-recovery procedures. I switched contingency power on, leveled the wings and nose, and centered the ball. I then focused on controlling the excessive rate of descent. I glanced at the radalt and saw it rapidly pass through 50 feet, as I established control. A moment later, it passed 10 feet.

According to the integrated-maintenance-diagnostic system (IMDS), we finally leveled off at seven feet.

Looking out the windscreen, I could discern a faint horizon about two-thirds up the windscreen, and nothing but black below.

After leveling off, I made a cyclic climb to get the aircraft away from the water. During the climb, I turned away from the last known course of lead and reported, "Executing over water IIMC procedures," on the squadron tactical frequency.

We hit the cloud deck at 100 feet and continued climbing to 1,000 feet, where we gained VMC-on-top. I reported to lead that we were OK and suggested we proceed single-ship to the carrier. After orbiting for 10 minutes, and making sure everyone was comfortable with continuing, we resumed the flight for an otherwise uneventful recovery.

How did this happen?

Operational requirements and certain missions require flight in marginal and degrading weather conditions, but sometimes we take the all-weather capabilities of our aircraft for granted. An IIMC breakup plan does not mitigate the hazards of IMC formation flight on its own merits. Executing an IIMC breakup is an emergency, and we should exercise good judgment, flexibility, and effective time-critical risk management (TCRM) to defeat emerging hazards before they threaten safety of flight.

As aircraft commander of the second aircraft, I should have developed and briefed more intermediate measures to address degrading weather conditions. When conditions became worse than expected, I should have been assertive and affected an early breakup of the section. My acceptance of the status-quo for weather mitigation indicated complacency and overconfidence on my part.

Formation flight requires reference to outside visual cues, while flight in IMC/marginal-VMC conditions requires a dedicated instrument scan. Combining formation flight with marginal weather increases danger and workload. Divide the added tasks and assign the extra responsibilities to specific crewmembers — we didn't do this.

My copilot and I followed our habit patterns by adopting scans appropriate for our roles (instrument/FLIR for non-flying pilot, instrument/visual scan for flying pilot), but we never briefed the importance of at least one pilot maintaining an instrument scan.

I also made poor use of our aircrewmen, who spent most of the flight watching the clouds. The crew chief could have monitored the backup instruments and called turns, angles of bank and descent rates. By the time I realized we were in trouble, it was too late to ask for help. The onset of vertigo, uncontrolled closure rate, and eventual entry into a perilous flight regime resulted in complete task saturation within 15 to 20 seconds.

I never figured I'd come so close to becoming a statistic. I learned there is no substitute to evaluating actual conditions, performing TCRM, and aborting the flight if necessary.

LT. DOUGHERTY FLIES WITH HSC-8.

Fiasco

BY JOHN W. OTIS

There's no need to share full names and dates, but I will offer that the following drama took place in May, 1953. Sometimes it's good to protect the innocent, as well as the guilty.

It was a dark and stormy night. Well, not stormy, but dark, and I was doing radar vectors, boring holes in the sky over the Gulf of Mexico in a Grumman AF Guardian. Some would say a beautiful night — lots of stars, but I couldn't see a horizon, the sky and the water blended seamlessly. So I had to stay on the instruments to keep us right side up. Plus, I was a bit nervous about doing my first night landing on that little boat down below.

The ship was one of those "baby flattops," a CVL or light carrier converted from a cruiser hull during those early years of WW II when there was a desperate need of carriers. The ship was 684 feet long and 108 feet wide. But given the arresting wires and the ship's going full speed into the wind, we were able to land on half of that. Still, it was a tight fit as the AF's wing span was 60 feet and it weighed about eight tons. The AF was the biggest plane to ever use this kind of carrier.

Our mission: the official one was to search for submarines. Our squadron was designated VS — V for the navy's aviation, S for submarines. But this mission was to be a sort of lark. We were to take the ship on a kind of holiday cruise from its home port at Quonset Point, R.I., around the southern tip of Florida, into the gulf of Mexico, and then up the ship channel into the Port of Houston. It just so happened that we had an admiral aboard whose hometown was Houston. I suppose he thought it a neat idea to bring a carrier home along with a bunch of VIPs to witness an aircraft carrier and its crew in all its smooth functioning phases. We were to be on our best behavior on this little five day jaunt.

I guess you could say that we tried but failed. On our first day out, one of our AFs splashed down on the downwind leg in the landing pattern. Oscar, the pilot, claimed engine failure. No one doubted him plus the evidence was several hundred feet deep. But the spectators got to see a spectacular water spout when that AF hit the water.

Then, two days later during landing operations, my pal Jack K. did something I thought impossible with an AF. He got "slow in the groove" on final approach a few yards short of the ship's fantail during landing operations. So the landing signal officer (LSO) gave him the "wave off," signal, meaning give it full throttle and go around again. Jack obeyed, but the torque from that big 2,700 hp engine pulled the plane up and over in a partial loop/Immelmann and sent it inverted towards the water. I was standing beside the LSO and looked away, certain that they'd all be killed — the pilot and his two crewman whose heads were sticking out of their open hatches. But lo! When I looked again there they were — three helmeted heads bobbing around in the water. In a few minutes the helicopter had them back on deck. Wow! I'll bet that little stunt impressed the VIPs. Perhaps they thought it a drill to demonstrate the efficiency of our plane guard — our safety helicopter and crew standing by during carrier ops.

And now, a day later on this dark night, it was my turn. I got in the pattern about 250 feet over water but kept dropping my left wing in the groove, when just about ready for the "cut," the mandatory signal to chop the throttle and land. So I kept getting waved off, finally getting the cut on my fifth try. The AF caught a wire with its tailhook, rolled ahead a few feet, and dropped its left wheel into the catwalk on the port side of the ship.

My two crewmen and I, not injured, exited without difficulty, but the AF was stuck, still hooked to the arresting wire with a wheel jammed in the catwalk.

Now, with six more AFs waiting to land, the ship's captain had two options: the first — to get my plane out of the way so the six could land or the second — to send them into NAS New Orleans to spend the night before returning the next day. He managed the worst of both options — first trying for an hour without success to bash my bird over the side by ramming it with the mules or deck tractors. Then finally sending the planes, now short of fuel, to New Orleans. The deck crew spent the rest of the night getting my plane over the side — which except for the prop, had suffered no other damage. The six pilots, meanwhile, had no money and wore nothing but their sweaty flight suits. I was unpopular for some time. The VIP spectators, though, could not have asked for more drama. Yet, there was more to come.

The next day the VIPs got to see our gunnery crew in action. The gunners were shooting at a radio-controlled drone and having a helluva time getting a hit. The drone was just a big model airplane with a wing span of six feet powered a tiny one-cylinder engine. The gunners were trying to score a hit without the fragmentation shells used in actual warfare. So it was like trying to hit a duck on the wing with a .22-caliber rifle.

Then our captain told the drone controller to bring the drone in closer before breaking off — a safety violation — but one that would give the gunners a chance to save face with a hit.

Well, the gunners got their hit, but this time the results were tragic rather than farcical. Their hit disabled the drone which turned upside down and crashed into the port side of the ship, striking an inch or so from a "blind hatch" where three sailors had taken refuge after seeing the drone heading their way. The blind hatches were small rooms, maybe six by eight feet, with one doorway that allowed entrance or exit only from the catwalk or walkways which extended along the ship's sides. In short, the result was the drone exploding into flames. The fire from its pint or so of gasoline followed the men into the blind hatch, fatally burning all three. The medical crew on board did what they could and made ready to fly the three to medical facilities at Houston or New Orleans, but they all died before that could take place.

That sad event — a freak accident if ever there was one — ended showtime for the VIP spectators. Had the drone been a foot or two higher, it would have mowed a path through them on the flight deck, the results of which would have probably been less horrific. By the time we reached Houston, our performances had cost three AFs and the lives of three men. As far as I was concerned, all the AFs in the fleet weren't worth the lives of those three sailors.

JOHN W. OTIS SERVED ON USS WRIGHT (CVL-49).

Editor's note: In 1953, Naval Aviation recorded 2,229 major mishaps, which is the equivalent of today's Class A mishap. The major mishap rate was 51.22 per 100,000 flight hours. There also were 402 aviation fatalities, for a rate of 9.24 per 100,000 flight hours.

I Was a Safety Hazard

BY LT. CHRIS RITTER

As we neared the end of our two-week fighter det, completing our scheduled events was a challenge. The urgency to get out the next few events was high, especially when dedicated bandits were a part of the flight schedule. A mass brief covered the admin items. It also covered the sets our section (with me as wing) and the two bandits would see during our initial basic-fighter-maneuvers (BFM) qual.

At this point of the det, the briefed items seemed standard. However, you could sense that everyone was on the verge of mental fatigue. Nonetheless, there were no issues voiced at the brief. Everyone walked to the jets.

During the start-up sequence, I did a lights test and noticed the gear handle remained dark. After a few more tries to check it, I called for an AE to troubleshoot. He came up on the LEX to have a look for himself, and told me that they could quickly change the bulbs. The delay meant we'd probably be the last out of the line.

We waited for a few minutes as a runner came out with a new bulb. The troubleshooter leaned in to start unscrewing the gear-handle cap. He leaned in awkwardly, fumbling with his screw driver to undo the cap. Naturally, once it was unscrewed, it came free and fell onto the floorboard between the seat and console. I knew retrieving it would take a while.

After several fruitless attempts to get the cap, I asked for a switch to the only spare. I hoped to salvage the event and unstrapped. All the players had left the line and were waiting at the holdshort. Time was growing short, and we would have to hustle to complete this event.

I flew down the ladder and over to the next jet, where the book was waiting. I thumbed through the pages looking for any major discrepancies, but I didn't find any. I scribbled my name on the A sheet and hurried through the preflight, I knew the timing was tight. The bandits had already taken off to begin their first series with another section. The EWO and I jumped into our seats, and immediately started through the checks and engine starts. We had no hiccups and everything seemed smooth. We were ready to taxi and signaled for the plane captain (PC) to pull chocks.

As the plane captain started the taxi-forward signal, the EWO asked, "What side number are we?"

I responded, "We're in 5...." Hmm, I had been too busy with the switch that I hadn't realized what side number I had just signed for.

I stopped the aircraft and mimed to the PC and troubleshooters, asking for the number on the nose. After a few moments, finally someone on the ground figured out our intent and signaled our side number. Off the brakes and forward I went to catch up with everyone else.

The event then went as advertised, and we completed all the sets and learning points. It wasn't until after I had landed that the desk chief told me about an issue. In my trying to figure out our side number after pulling chocks and a taxi-forward sign, I either missed or did not acknowledge the PC efforts to rechock the plane. They thought something was wrong when I had suddenly stopped. Thinking I was still under my own braking power after the side number was sorted out and while trying to start taxing again, I didn't realize someone from the line had gone under the aircraft to pull the chocks as I came up on the power to come forward. I thought about how close a call this was, and how I could have blown someone over, or worse. The individual had quickly recognized the situation and gotten clear of the aircraft.

I was humbled to realize that even in the relative comfort of the line, danger still lurks.

I could have been the cause of hurting someone. It took a close call to learn that there is no need to rush a situation, especially during a training evolution. Had I taken it a little slower, kept a normal pace and noted the side number, I could have avoided this situation.

I gave a couple cases of soda for the shack and offered a sincere apology to the troubleshooter I had put in harm's way.

LT. RITTER FLIES WITH VAQ-139.

No manual can cover every situation or be a substitute for sound judgment; operational situations may require modification of the procedures contained therein. Read these publications from cover to cover. It is your responsibility to have a complete knowledge of their contents.